(b) What has been the value of average monthly consumption of heavy earth moving machinery spare parts;

Company-wise average monthly consumption of HEMM spares are as follows:—

COMPANY	AVERAGE MONTHLY CONSUMPTION (Rs. in Crores)
ECL	3.80
BCCL	4.96
CCL	6.17
WCL	5.29
SECL	8.25
MCL	3.81
NCL	11.93
NEC	0.04
CIL TOTAL	44.25

(c) whether Government are satisfied with the spare parts inventory management in Coal India Limited and its subsidiaries;

Having regard to the principles of inventory management, CIL has prescribed a norm that the inventory should not exceed the value of 10 months consumption.As on 31.3.96 the inventory stood at the level of 11.56 months consumption. This is not satisfactory. however, what is encouraging is that, as compared to a stock holding of 14.39 months consumption in 1992-93, it has steadily come down and in 1995-96 it stood at 11.56 months consumption only. this is encouraging.

(d) if not, what action government propose to take for streamlining the inventory management?

The Coal companies have introduced systems for better management of inventory in coordination with spare parts manufactures in order to ensure timely delivery of spares such that extra stocks need not be maintained by them. Further, a computerised system of inventory management is being introduced and codification work has already begun with nine lakh spare parts already codified. In due course, all the spare parts will be codified and brought on to an online computerised integrated material management system for better and effective management of inventory.

Task Force to Identify Areas of Medical Biotechnology

*78. SHRIMATI BASANTI SARMA:
DR. SHRIKANT RAM-CHANDRA JICHKAR:

Will the Minister of SCIENCE AND TECHNOLOGY be pleased to state:

(a) the work accomplished by the Task force appointed by the Department of Biotechnology to identify areas of medical biotechnology;

(b) the names of projects which are under way now;

(c) what are its tentative results; and

(d) what are the future prospects of medical biotechnology?

THE MINISTER OF STATE OF THE MINISTRY OF SCIENCE AND TECHNOLOGY AND MINISTER OF STATE OF THE MINISTRY OF POWER (SHRI YOGINDER K. ALAGH): (a) and (b) Expert Task Forces advise the Department of Biotechnology in all important areas of biotechnology. The Medical Biotechnology Task Force has helped the department in identification, recommendation and monitoring of about 124 R & D projects in frontier and relevant areas. The broad emphasis of the Task Force has been on: (1) developing diagnostics for early diagnosis, prophylaxis and therapeutics in relation to communicable and non-communicable diseases, (2) devising alternate drug delivery systems using liposomes and microspheres. (3) production of important biologicals and bioactive molecules using suitable expression

system and modern fermentation technologies.

(c) Some significant achievements include: development of diagnostic kits, new vaccine strains, drug delivery systems, basic structural studies, creation of repositories of important micro-organisms and training of human resource. A new drug formulation has been transferred to industry for the use in curing systemic fungal infection and leishmaniasis. An oral recombinant candidate cholera vaccine strain has been developed; nucleic acid probes have been developed to detect drug resistant strains of *M. tuberculosis;* tests have been developed for diagnosis of HIV using peptides/recombinant proteins, western blot.

(d) Looking at the disease burden, trends of emerging and re-emerging infections, the future plan of work would be related to the molecular epidemiology, drug development, small therapeutics, recombinant vaccines , genetic medicine and molecular pathogenesis including genome mapping, etc.

Research in Malaria

*79. SHRI JAGIR SINGH DARD:
DR. SHRIKANT RAM-CHANDRA JICHKAR:

Will the Minister of SCIENCE AND TECHNOLOGY be pleased to state:

(a) how is the project undertaken by the Department of Biotechnology known as "Research on Malaria for development of diagnostics and maintenance of parasite bank" functioning;

(b) what has been done uptill now under this project; and

(c) what are the future plans?

THE MINISTER OF STATE OF THE MINISTRY OF SCIENCE AND TECHNOLOGY AND MINISTER OF STATE OF THE MINISTRY OF POWER (SHRI YOGINDER K. ALAGH): (a) Considering the disease burden of Malaria as a major public health problem in the country, and recommendations of many expert meetings, the Task Force of the department recommended a project entitled "Reasearch on Malaria for development of diagnostics and maintenance of parasite bank" which was funded during March, 1992 to Malaria Research Centre, Delhi.

(b) Experts have assessed the achievements of the project. The malaria parasite bank serves as a National Resource Centre with a variety of human and non-human plasmodia. At present the facility holds well characterised 176 isolates of *Plasmodium falciparum,* 135 *P. vivax,* 3 simian, 10 rodent and 2 avian parasites. *In vitro* cultivation, cryopreservation and revival methods have been fully standardised. More than 124 laboratories/scientists have been supplied parasite and other related biological materials. Monoclonal antibody against circum sporozoite protein has been produced for vector incrimination works. Primers are available to distinguish sibling species of mosquitoes. This will help in understanding the biology of vectors and how they influence the transmission. Scientists have successfully cultured the hepatic stages of human malaria parasite (*P. vivax*) for the first time in the country which will help in providing antigenic materials for research on immunology and immuno-prophylaxis. Short-term cultivation of erythrocytic stages of *P. vivax* has been achieved. Complete cycles of rodent malaria parasites both in animals and in mosquitoes are being maintained for testing the efficacy of anti-malarials and immunological studies. Two new potential chemotherapeutic agents have shown high achizontocidal activities. Cloning experiments have provided very useful information on the phenomenon of parasite resistance in the field population— an emerging problem of the country. Twenty two (33.3%) of the isolates were found to be resistant to chloroquine out of 62 isolates tested from